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A comparison of interaction behaviors in elementary physical education classes differing in attitude toward physical education

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A COMPARISON OF INTERACTION BEHAVIORS IN ELEMENTARY PHYSICAL EDUCATION CLASSES DIFFERING IN ATTITUDE TOWARD PHYSICAL EDUCATION

by

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An Abstract

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ABSTRACT

The interaction behaviors of elementary physical education classes with a more positive attitude toward physical education were compared to the interaction behaviors of elementary physical education classes with a less positive attitude toward physical education. Subjects were 20 elementary physical education classes from the central New York area. Each participating class was videotaped twice on predetermined days, and the Revised Form of the Children's Attitude Inventory Toward Physical Education (RFCAIPE) was administered to the students in the participating classes on the occasion of the second taping session. Classes were divided into groups classified as more positive attitude and less positive attitude based upon class means on the RFCAIPE. Videotapes of the 20 participating classes were coded using Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS). The CAFIAS data recorded were placed on computer cards for analysis. Multivariate analysis of variance revealed significant differences in the interaction behaviors of classes differing in attitude toward physical education at the .05 level of significance. Univariate analyses of variance revealed the groups to be significantly different on the following CAFIAS variables when considered independently: teacher use of acceptance and praise, verbal; teacher use of acceptance and praise, nonverbal; teacher use of questioning, verbal; and teacher use of questioning, nonverbal. Discriminant function analysis revealed teacher use of acceptance and praise - verbal and teacher use of questioning - verbal accounted for 84.42% of the variance between the two groups. It was concluded that there were significant differences in the classroom behaviors of elementary physical education classes with differing attitudes toward physical education.

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A Thesis Presented to the Faculty of
the School of Health, Physical
Education, and Recreation
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Requirements for the Degree
Master of Science

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by
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Ithaca College
School of Health, Physical Education and Recreation
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CERTIFICATE OF APPROVAL

MASTER OF SCIENCE THESIS

This is to certify that the Master of Science Thesis of

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submitted in partial fulfillment of the requirements for the degree of Master of Science in the School of Health, Physical Education, and Recreation at Ithaca College has been approved.

Thesis Advisor:

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DEDICATION

To my parents

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Chapter 1

INTRODUCTION

"Attitudes determine for each individual what he will see and hear, and what he will think and do" (Allport, 1935, p. 806). Allport's belief points out the significance of the development of positive attitudes toward physical education as an important goal if the individual is to remain active in physical activities beyond high school. Further, reduction of unfavorable attitudes is necessary for the physical education program to become more attractive and achieve favorable results for the individual and society (Clarke, 1959; Squires, 1956). Support of the significance of attitude development in physical education is further reflected by the great emphasis placed upon affective behavioral modification in modern physical education literature and the bulk of research which has been performed dealing with attitude measurement and development in physical education.

Brownell and Hagman (1951) pointed out that attitudes are developed through long exposure to accumulative experiences which influence the individual, by emulation in which the attitudes of an admired or accepted individual or social institution are assumed as one's own, and by association when like or dislike for one factor conditions feelings about all things related to that factor. Over the years, researchers have attempted to pinpoint the experiences, individuals, and factors in the physical education environment which are related to the development of differing attitudes toward physical education. Some of those factors believed to be related to attitude development have included the physical education background of the student (Alden, 1932; Bullock & Alden, 1933), motor ability (Broer, 1955; Mason, 1953), parental influences (Oldershaw, 1960), success in physical

education (Carr, 1945), and teaching style (LaPlante, 1964), among others.

In an attempt to further the attitude research dealing with elementary aged school children, Toulmin (1973) developed an inventory designed to measure attitudes of fourth, fifth, and sixth grade students toward physical education. In 1977, the Toulmin instrument was revised into the Children's Attitude Inventory Toward Physical Education (CAIPE) (Routon, 1977). The development of such an attitude inventory allowed elementary school children to let their feelings be known (Toulmin, 1973). In addition, it is now possible to conduct research attempting to reveal the factors, experiences, and individuals which are related to the development of differing attitudes in elementary school age children similar to the attitude research conducted at higher levels. The search for relationships between certain factors in the physical education environment and student attitudes is necessary if the physical educator is to modify his environment in order to contribute to the development of positive attitudes toward physical education (Squires, 1956).

It would seem that the teacher in the physical education class would be one of the main factors influencing attitude development as this person is in a position to help create the experiences out of which grow favorable attitudes and interests (Plummer, 1952). If the teacher desires to modify his methods and behaviors in order to develop those favorable attitudes in his students, it is first necessary to be able to uncover the teaching methods and behaviors which aid in bringing about positive attitudes (Burnstine, 1966). Employment of an interaction analysis system would be instrumental in revealing those teaching behaviors which bring about more positive student attitudes as such systems have been credited with changing the teaching process from an unexplainable interaction to a process which can be planned, observed, assessed, modified, and executed (Mancini, 1974).

In the present study, Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was used to compare teaching behaviors in upper level elementary physical education classes with differing attitudes toward physical education (Cheffers, Amidon, & Rogers, 1974). The Revised Form of the Children's Attitude Inventory Toward Physical Education (RFCAIPE) was administered to all classes involved in the study in order to determine class attitude toward physical education. Following the classification of classes based on the results of RFCAIPE, the CAFIAS data were analyzed in order to identify the differences which existed between interaction patterns in elementary physical education classes differing in attitude toward physical education. If any such differences may be revealed, there will exist a basis for further research exploring modification of classroom interaction behaviors and the effects of interaction behaviors upon the attitudes of elementary school children toward physical education.

Scope of the Problem

This study was initiated to compare the teacher interaction behaviors of 10 teachers of upper level elementary physical education classes with a more positive attitude toward physical education to the behaviors of 10 teachers of upper level elementary physical education classes with a less positive attitude toward physical education. All subjects were from the Ithaca-Cortland-Elmira area of central New York. Each class was videotaped during the spring of 1980. Each videotaped session was coded using Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) and the raw data were placed on computer cards. Interaction patterns for each class were determined from the combined computer results of two class sessions.

In a pilot study, the Children's Attitude Inventory Toward Physical

Education (CAIPE) was administered to 125 fourth, fifth, and sixth grade physical education students. Analysis of the scores of these subjects on CAIPE resulted in the elimination of 25 items from this 50-item survey. The resulting 25-item Revised Form of the Children's Attitude Inventory Toward Physical Education (RFCAIPE) was retained for use in the present study.

The RFCAIPE was administered to the students in each of the 20 classes analyzed. The mean score for each class on the inventory was used to separate classes into groups classified as more positive and less positive in attitude toward physical education. Computer analysis compared percentages of behaviors between the two groups.

Statement of Problem

This investigation was undertaken to compare the interaction behavior patterns prevalent in upper level elementary physical education classes with a more positive attitude toward physical education to those interaction patterns prevalent in similar classes with a less positive attitude toward physical education.

Hypothesis

There will be no significant differences between interaction patterns of upper level elementary physical education classes which indicate a more positive attitude toward physical education and the interaction patterns of upper level elementary physical education classes which indicate a less positive attitude toward physical education.

Assumptions of the Study

The following assumptions were established in regard to this study:

1. Differences in student skill level, student sex, teacher sex, activity, or grade within the upper elementary level would not affect student

attitudes or interaction patterns of teachers and students.

2. The subjects selected were representative of the population of upper level elementary teachers and students in central New York.

3. The Revised Form of the Children's Attitude Inventory Toward Physical Education gave a true indication of student attitudes toward physical education.

4. The coding of two class sessions using CAFIAS would be appropriate to establish a pattern of interaction behavior for each class.

5. The use of a reliable coder was adequate to obtain a factual representation of the situation.

Definition of Terms

The following terms were operationally defined for the purpose of this investigation:

1. Children's Attitude Inventory Toward Physical Education (CAIPE) is a 50-item attitude inventory consisting of six content areas developed by Sherrill and Toulmin in order to measure the attitudes of upper level elementary school children toward physical education (Routon, 1977).

2. Revised Form of the Children's Attitude Inventory Toward Physical Education (RFCAIPE) is a 25-item attitude inventory constructed with questions from CAIPE and tested for validity against CAIPE.

3. Classes with a more positive attitude toward physical education are those classes in which the mean on the RFCAIPE is above the median of the classes studied.

4. Classes with a less positive attitude toward physical education are those classes in which the mean on the RFCAIPE is below the median of the classes studied.

5. Verbal behavior is spoken behavior.

6. Nonverbal behavior is observable conduct or interaction which is not audible.

7. Flanders' Interaction Analysis System (FIAS) is an objective observation system designed to measure 10 categories of verbal teacher-student interaction (Amidon & Flanders, 1971).

8. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) is an interaction analysis system specifically designed for use in physical activity settings which expanded FIAS to objectively describe verbal and nonverbal teacher-student interaction behaviors, class structure, and teaching agencies (Cheffers et al., 1974).

9. Upper level elementary is grades four through six.

Delimitations of Study

The following were delimitations of this study:

1. Students on the upper elementary level and their teachers served as subjects for this study.

2. The Revised Form of the Children's Attitude Inventory Toward Physical Education (RFCAIPE) was the attitude inventory used to measure student attitudes in this study.

3. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was the interaction analysis system used to describe teaching behaviors in this study.

Limitations of Study

The following were the limitations of this study:

1. The findings may only be valid for upper level elementary physical education.

2. The findings may only be valid when RFCAIPE is used to classify class attitudes.

3. The findings may only be valid when CAFIAS is used to describe teacher-pupil interaction behaviors.

Chapter 2

REVIEW OF RELATED LITERATURE

The review of related literature will present previous research and writings concerned with attitudes toward physical education and interaction analysis of teaching behaviors related to the problem of this study. The discussion will focus on the following areas: (a) comparative studies utilizing Cheffers' Adaptation of Flanders' Interaction Analysis System, (b) development of a scale measuring attitudes toward physical education, and (c) analysis of factors related to formation of attitudes toward physical education.

Comparative Studies Utilizing Cheffers' Adaptation of Flanders' Interaction Analysis System

Only with the concrete definitions of various teaching behaviors and the ability to objectively illustrate that a given type of behavior did or did not occur can teaching methods be modified with any efficiency (Dougherty, 1971). Interaction analysis systems have provided such concrete definitions and the objectivity necessary to effectively describe teaching behaviors. Although a number of these systems have been developed and used successfully, the most widely used interaction analysis tool is Flanders' Interaction Analysis System (FIAS) (Cheffers & Mancini, 1978).

FIAS is a method of objectively recording verbal interaction in the classroom with a minimum of observer bias, and it serves to distinguish teacher acts increasing student freedom from those decreasing student freedom (Amidon & Flanders, 1967; Dougherty, 1971). Dougherty (1971) listed the following applications of FIAS: (a) use in modification of teacher behavior, (b) use in determining the effects of direct versus indirect teaching styles,

and (c) use in discriminating between patterns of teaching behavior. Despite the values of FIAS, Cheffers, Amidon, and Rodgers (1974) felt that its uses were limited especially in the physical education setting due to its inability to record nonverbal behaviors and the fact that it treated only the teacher as the teaching agent. This meant that FIAS could only describe classes conducted in the traditional teacher-pupil interaction setting.

Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was Cheffers' answer to the shortcomings evident in FIAS. CAFIAS improved upon FIAS by matching every verbal behavior category with a nonverbal category, adding a third student response category, and providing the symbolism which could indicate class structure (Cheffers & Mancini, 1978). This system has been used to study teacher-student interaction behaviors in a variety of studies investigating various problems. Comparisons of teaching behaviors and teaching methods across various environments is one area in which CAFIAS has been used extensively.

Agnew (1977) examined the interaction behaviors of 20 female physical educators in the physical education setting and the coaching setting. The behavior of each subject was coded in CAFIAS as it occurred in each of the two settings. The behavior patterns of the subjects varied significantly in several aspects from the teaching setting to the coaching setting. Analysis of data recorded led to the following conclusions: (a) interaction was more evident in the coaching setting, (b) in the coaching setting, there was more pupil initiated behavior, teacher and student suggested, (c) more praise and acceptance were used in the coaching setting, (d) use of student questioning occurred more often in the coaching setting, and (e) interaction between teacher and athlete was more flexible in the coaching setting (Agnew, 1977).

Many studies have been performed comparing the interaction behaviors of male and female physical educators. Two such studies were undertaken by Faulkner (1976) and Nygaard (1975). CAFIAS was the interaction analysis system used by Faulkner, whereas, Nygaard investigated the problem by coding behaviors with FIAS. Beyond the interaction analysis system used, these studies also differed with respect to type and number of subjects. Faulkner observed 40 male and 40 female pre-service physical education teachers; Nygaard observed 40 physical education classes. Finally, differences were found in the conclusions of the two studies as well. Faulkner (1976) found no significant differences in the interaction patterns between male and female physical educators, whereas, Nygaard (1975) found male teachers to be more direct and female teachers to be more encouraging of student talk.

Mancini (1974) utilized CAFIAS in conjunction with the Cheffers and Mancini Human Movement Attitude Scale in order to compare two decision-making models in an elementary human movement program. In one model, the teacher made all of the class decisions; in the second model, the students took part in the decision-making process. There were 505 elementary school children who took part in this study. Results indicated that the students actively involved in the decision-making process enjoyed the program more. Within this group, there were also increased positive interaction between the students and the teachers, increased student initiatives and contributions, and an increased variety of teaching agencies employed (Mancini, 1974).

In studies performed by Vogel (1976) and Rochester (1976), the effect of training in CAFIAS upon teacher behavior was examined. Student teachers served as subjects in both studies. In Vogel's investigation, the treatment group received 10 hours of instruction in CAFIAS, and the control group

received no instruction. Rochester's control group was familiarized with CAFIAS, while the treatment group was familiarized with CAFIAS, was taught to code using CAFIAS, actually coded tapes, and discussed the results. CAFIAS was used in analysis of teacher behavior in both studies. Based on their results, Vogel (1976) and Rochester (1976) both concluded that knowledge and understanding of CAFIAS and its uses were beneficial in the supervision and training of student teachers.

In a study designed to differentiate between teacher interaction behaviors of effective and less effective coaches, Avery (1978) utilized CAFIAS in conjunction with an instrument measuring coaching effectiveness. Each subject was viewed on videotape by a panel of four experienced teachers who scored each coach on the Coaches' Performance Criteria Questionnaire. Scores from this questionnaire were used to divide the 30 subjects into two groups, effective and less effective. The videotape of each of the coaches was also coded in CAFIAS and an analysis of differences was performed in order to determine the coaching behaviors characteristic of effective and less effective coaches. Five of eight variables tested were found to indicate significant differences. Teacher use of acceptance and praise, which was more prevalent in the teaching behavior of the effective coaches, was the greatest contributor to between-group differences; effective coaches also displayed more indirect teaching behaviors (Avery, 1978).

Hirsch (1978) compared coaches' interaction behaviors as they differed in satisfied and less satisfied athletic environments. Proulx (1979) performed a similar study with the exception of changes in methodology. The interaction behaviors of female coaches in different athletic environments were compared by Staurowsky (1979).

The three researchers utilized the Group Environment Scale (GES), an instrument designed to assess social climate in social, task-oriented groups, in order to determine the classification of teams as satisfied or less satisfied (Staurowsky, 1979). Scores on the R form of the GES indicated the athletes' perception of the actual team environment; scores on the I form measured the athletes' perception of an ideal team environment. The variables used to classify the environment were cohesion, leader support, expressiveness, independence, task orientation, self-discovery, anger and aggression, order and organization, leader control, and innovation. A multivariate analysis of variance was performed to determine if the scores obtained on the R and I forms were significantly different. Teams were divided into two groups, satisfied and less satisfied, based upon the amount of discrepancy between the perceived real and the perceived ideal athletic environments (Hirsch, 1978; Proulx, 1979; Staurowsky, 1979).

Subjects for the three studies were coaches and athletes from central New York. Twenty basketball teams participated in the Hirsch (1978) and Staurowsky (1979) studies; Staurowsky performed her study with female subjects exclusively. Subjects in these investigations were videotaped twice. The R form of the GES was administered on the occasion of the first taping, and the I form of the GES was administered on the date of the second taping. In comparison, Proulx (1979) observed each of the 10 teams on four occasions; the R form of the GES was administered at the first taping, and the I form was administered at the final taping.

All videotaped sessions were coded in CAFIAS in all three studies. Hirsch (1978) and Staurowsky (1979) ran a multivariate analysis of variance on eight CAFIAS variables to determine differences in interaction behaviors between coaches and athletes in satisfied and less satisfied environments. Proulx (1979) analyzed data from 20 CAFIAS variables finding significant

differences between satisfied and less satisfied teams on eight interaction variables. Common findings with respect to coach-athlete interaction behaviors indicated: (a) significantly more indirect interaction behaviors were used by coaches in satisfied environments; (b) coaches in satisfied environments made significantly greater use of praise and acceptance behaviors; and (c) significantly more athlete initiated behaviors, coach suggested, occurred in the satisfied environment (Hirsch, 1978; Proulx, 1979; Staurowsky, 1979).

Summary

The literature cited in this section briefly describes interaction analysis and CAFIAS with the emphasis placed on selected studies comparing teacher-student interaction behaviors in different environments and under different teaching conditions. The studies described serve to illustrate the value of CAFIAS as an objective interaction analysis tool in the comparison of behaviors present in two different physical education settings.

Development of a Scale Measuring Attitude Toward Physical Education

Attitude studies have been conducted in various fields since 1920, advancing from the use of scales on which students were asked to check likes and dislikes to the use of Thurstone and Likert-type scales (Acord, 1977). In the field of physical education, a number of scales have been developed (Adams, 1963; Carr, 1945; Edgington, 1968; Moore, 1941; Simon & Smoll, 1974; Toulmin, 1973; Wear, 1951). These instruments have been used in a variety of studies researching attitudes toward physical education at ages ranging from the elementary age level to the college age level and investigating variables ranging from religious preference to skill level. The most widely used of these attitude scales is Wear's Attitude Inventory (Acord, 1977).

Development of Wear's Physical Education Attitude Inventory

Wear's (1951) inventory is a Likert-type survey developed specifically as a valid and reliable measurement tool to assess the attitudes of students toward physical education at the State University of Iowa. The development of such a scale required a number of steps and test administrations.

In initiation of his research, Wear (1951) formulated and selected statements from men enrolled in physical education at Iowa and from books and articles in periodicals which represented expressions of feeling concerning the value of the outcomes of physical education. This procedure yielded a list of 289 statements about physical education. Wear edited this list to a 122-item survey which was administered to 75 college men. Test results were subjected to an item analysis which resulted in the formulation of the 120-item Wear Attitude Inventory.

Wear (1951) established the validity of this inventory by correlating self-ratings on a 9-point scale designed to indicate feelings toward physical education with scores obtained on the inventory. The Pearson product-moment correlation coefficient computed for 464 individuals who completed the survey was .80. Reliability of Wear's instrument was .96 as determined by the split-halves method. When raised by the Spearman-Brown prophecy formula, the coefficient became .98.

In the development of a short form of the inventory, an item analysis was performed to determine which of the 120 items would be eliminated. The resulting indices of discrimination ranged from .16 to .82; the median was.58. The 58 items which had indices above the median were retained for the short form. Tetrachoric correlation coefficients were computed for these items using the results of 100 completed surveys. Those items which were computed to be below the .70 level on the tetrachoric correlation were

eliminated. Other factors considered in the elimination of items included: (a) whether the item was stated negatively or positively, (b) the index of discrimination of each item, and (c) the total number of students who had received a score of 4 or 5 on the item in the two extreme groups used in the original item analysis. This process yielded the Short Form of the Physical Education Attitude Inventory consisting of 40 items.

Validity of the short form was determined using computations similar to those employed in the validation of the original survey. The Pearson product-moment correlation coefficient was found to be .80 for 268 subjects. The reliability coefficient computed using the split-halves method was .94 for 272 subjects. This was raised to .97 by the Spearman-Brown prophecy formula. Wear (1951) concluded that his instrument provided for a reliable and valid measurement of attitudes toward physical education for male and female students at the high school and college levels. The final form of Wear's attitude measurement tool has been employed in a number of studies, adapted for use with different age groups, and used as a model for the development of similar attitude inventories.

Development of the Children's Attitude Inventory Toward Physical Education

Following a research design similar to that of Wear, Toulmin (1973) developed an attitude inventory to measure the attitudes of children at the upper elementary school level.

As did Wear (1951), Toulmin (1973) initiated her research by obtaining written statements from 331 elementary school children between the ages of 9 years and 12 years; the statements were to indicate the feelings or attitudes of these children toward physical education or the attitudes of others which these children had heard expressed. This process yielded 110 statements which were labeled as favorable or unfavorable and classified into

the following categories: (a) program content, (b) outcomes of program content, (c) teacher, (d) wearing apparel, (e) facilities and equipment, (f) peer group relations, (g) scheduling and time spent, and (h) self-concept and level of aspiration.

The order of the 110 items was randomized, directions were developed for filling out the survey, and an answer sheet was designed to coincide with the survey so that the test could be administered. A graphic self-rating scale, to be used in validation of the instrument, and the preliminary form of Toulmin's instrument were administered to 365 elementary school children between ages 9 and 12 attending school in Texas. Ninety-six answer sheets were discarded due to inadequate responses leaving 269 remaining, of which 137 were filled out by females and 132 by males.

The internal consistency of the instrument was tested by the Flanagan method of discrimination. An item analysis was computed based upon the highest 27 percent of the scores and the lowest 27 percent of the scores. The index of discrimination for each item was computed by calculating the percentage of "high scorers" and the percentage of "low scorers" answering the item positively. The items revealing the highest indices of discrimination, between 40 and 66, were considered for retention. Forty-three statements below 40 were eliminated. Another 17 items were discarded either due to similarity with an item possessing a higher index or in an attempt to maintain a balance of numbers between the favorable and unfavorable items in various categories.

Fifty items, 24 positive and 26 negative, representing six categories, were retained for the final form of Toulmin's instrument. This form was administered to 315 elementary school children. The test results of 50 subjects of each sex in each grade were randomly selected to determine

validity and reliability of the final form.

Validity of the final form was determined by computing the correlation coefficient between total scores on the attitude survey and self-ratings on a 10-point graphic rating scale. Construct validity was determined by an analysis of variance of known groups on the total scores from the attitude survey, scores on the graphic self-rating scale, and AAHPER fitness scores. Using the Pearson product-moment technique, the correlation coefficient found between total scores on the attitude survey and self-ratings on the graphic rating scale was .29. The analyses of variance between known groups yielded significant F ratios beyond the .01 level of significance, lending support to the construct validity of the survey.

A reliability coefficient for Toulmin's final instrument of .83 was found using the split-halves technique; this value was raised to .91 when the Spearman-Brown prophecy formula was applied.

Toulmin (1973) also analyzed her instrument in order to determine its appropriateness for different grades and sexes. A two-way analysis of variance for sex and grade level indicated no significant differences, supporting test appropriateness across sexes as well as across grades within the upper elementary level.

Toulmin (1973) concluded that this instrument for attitude measurement had acceptable validity and was highly reliable for upper level elementary school students of both sexes. The researcher went on further to point out that children at this level possess very favorable attitudes toward physical education, therefore, measurement of attitude must be aimed at discrimination between positive values rather than discrimination between positive and negative attitudes (Toulmin, 1973).

In 1977, Sherrill (Toulmin's advisor at Texas Woman's University) and three high school principals from Denton, Texas, revised Toulmin's instrument and named the revision the Children's Attitude Inventory Toward Physical Education (CAIPE). The statements in this inventory were identical to those in Toulmin's original instrument with the exception of the replacement of two questions and minor grammatical changes. CAIPE was administered to 315 upper level elementary students by Routon (1977) for the purposes of his study. Reliability, using the split-half correlation technique, was established at .91. Significant differences were found between the scores of athlete and non-athlete groups supporting construct validity of the instrument by the method of known groups (Routon, 1977).

Summary

This section focused primarily on the development of two instruments measuring attitudes toward physical education, Wear's Physical Education Attitude Inventory and CAIPE. Wear's (1951) inventory was described as a highly reliable and valid tool which has been widely used and accepted for use with students at the high school and college levels. Toulmin's (1973) instrument was developed specifically for children on the upper elementary level following the same procedures as Wear. This instrument was slightly revised and named the Children's Attitude Inventory Toward Physical Education (CAIPE) (Routon, 1977). This inventory has been determined to be valid and highly reliable for males and females at the upper elementary level.

Analysis of Factors Related to Formation of Attitude Toward Physical Education

"If the reorganization or change of values and attitudes is to be accomplished by educators, there must be an awareness of the source of such values and attitudes" (Bowman, 1958, p. 7). In the field of physical

education, many researchers support the need to seek out those factors which influence the attitudes of physical education students so that those factors may be brought to the awareness of the physical educator who exerts control over the variables in the physical education environment (Burnstine, 1966; Edgington, 1968; Wear, 1951). In response to the perceived need for this type of research, a number of investigations have been performed analyzing the effect of factors such as teaching method, activity, instructor, skill level, school size, and physical education program upon the development of differing attitudes toward physical education.

Campbell (1968) and Moawad (1960) attempted to discover a relationship between high school size and student attitudes toward physical education. Moawad proceeded by administering his own multiple choice type attitude inventory to 352 males attending 15 randomly selected high schools, whereas, Campbell administered the Wear Physical Education Attitude Inventory to 199 lower division male students in the required physical education program at the University of Texas, Austin. In addition, each subject in Campbell's study was asked to indicate the number of students in the high school he had attended. Campbell found no significant differences in attitudes of students who had attended various-sized high schools, but Moawad found that boys who were attending schools with enrollments from 101-500 had more favorable attitudes than boys in schools with smaller or larger enrollments.

Alden (1932) and Bullock and Alden (1933) performed studies in search of those factors influencing the development of favorable and unfavorable attitudes toward physical education. Both investigations revealed that the high school program plays a major role in attitude development. Alden (1932) found that those students who liked high school physical education tended to continue to like physical education at the college level. Those factors

which appeared to be related to the development of negative attitudes were a lack of training of high school physical educators responsible for teaching those who had developed negative attitudes and a lack in the type and number of activities in the high school physical education program. In addition, Bullock and Alden (1933) found the failure of secondary schools to develop elementary skills beyond the novice stage played a major role in the development of negative attitudes toward physical education in college women. Other major factors revealed as influencing the development of negative attitudes included the inconvenience of dressing and undressing, lack of time for dressing resulting in untidiness, and lack of time allotted to each activity (Bullock and Alden, 1933).

Broer (1934) studied the effect of participation in a special basic skills course for low-motor-ability freshman women at the University of Washington upon attitude toward physical education. The Wear Physical Education Attitude Inventory was employed to measure the expressed attitudes of the special group as well as a control group upon entrance to college and following participation in each activity course. At the end of the special course, the attitudes of the experimental group were only slightly higher than those of the control group, but attitudes of the special group continued to improve with participation in subsequent courses to the degree that these students' mean attitude score became significantly higher than that of the control group.

Further, Broer (1934) attempted to determine whether a particular activity or a particular instructor was responsible for a difference in attitudes. Similarly, Broer, Fox, and Way (1955) administered the Wear Attitude Inventory to the freshman and sophomore women at the University of Washington to determine if the activity they enrolled in or the class

instructor played a role in student attitude formation. Broer (1934) found neither participation in a particular activity nor the instructor were responsible for any differences in attitude. However, Broer et al. (1955) found differences between attitudes of students enrolled in varying activity courses, but very few significant differences between the mean attitude scores of students who had various instructors. Broer et al. (1955) pointed out that the differences revealed may be due to various selective factors.

A number of researchers have attempted to reveal relationships existing between student skill level and student attitude. Plummer (1952) performed such a study with 512 women college students. Attitudes were determined from the results of a two-part attitude scale and motor ability was determined by teacher ratings. Results indicated no high degree of relationship between a subject's motor ability and her disposition toward physical education.

In contrast to the findings of Plummer (1952), Carr (1945), Mason (1953), and Squires (1956) found significant differences in the attitudes of students performing at different skill or intensity levels. Mason (1953) executed his study utilizing 172 college freshman women as subjects and employing the Drinkwater Attitude Inventory and the Scott Motor Ability Test as measurement instruments. Significant differences were found between the attitudes of high-motor-ability students and low-motor-ability students; those of higher ability expressed more favorable attitudes. In addition, the parents of the high-motor-ability group expressed significantly more positive attitudes toward physical education.

Carr (1945) developed a Thurstone and Chave type attitude scale to measure the attitudes of 335 freshman high school girls. The subjects were labeled as successful or unsuccessful based upon their physical education

grade; those earning an A or B were defined as successful, while those receiving C or D grades were defined as unsuccessful for the purposes of the study. A comparison of the expressed attitudes of the two groups revealed significant differences. In addition, the results of this study revealed significantly greater motor ability scores and I.Q. scores for the successful group.

Senior boys in 27 Connecticut high schools participated in Squires' (1956) investigation. Level of ability was determined by athletic participation; the comparison was made between varsity athletes and all other students. Results indicated that varsity athletes as a group have a significantly more favorable attitude toward physical education than other students. In concluding, Squires (1956) stated that as the characteristics of the physical education program become more similar to the finer qualities of the varsity sports program, its effect upon student attitudes will improve due to a number of factors.

A number of studies have been conducted comparing the effects of various teaching methods on attitudes toward physical education. LaPlante (1964) compared resulting attitudes of students taught by teachers employing the problem-solving method in teaching bowling and the conventional method of teaching bowling. Subjects were selected from three service classes at the University of North Carolina at Greensboro. The measurement tool used in this study was the Drinkwater Attitude Inventory. Results indicated that upon completion of the course there were no significant differences in the expressed attitudes of the students taught by the two differing methods.

Summary

A number of studies have been performed in an attempt to reveal the factors in the physical education environment related to the formation of

differing attitudes toward physical education. Researchers have utilized various methods and measurement instruments primarily at the high school and college levels in their attempt to discover any significant factors. Although the results of these studies show some inconsistencies, they have served to indicate some of the factors in the physical education program related to the formation of positive or negative attitudes toward physical education.

Summary

Comparative research in teacher behavior utilizing CAFIAS as an interaction analysis system has revealed differences in classroom behaviors on several CAFIAS variables. The results of such studies hold implications for the existence of relationships between various physical education environments or various factors within the physical education class and the interaction patterns prevalent in these physical education classes.

With respect to student attitudes toward physical education, a number of factors have been examined in order to reveal any existing relationships to attitude. The studies discussed were performed only on the secondary and college level. In response to a perceived need for an attitude inventory for elementary school aged children, Toulmin (1973) designed an attitude inventory for upper level elementary school students.

Chapter 3

METHODS AND PROCEDURES

This chapter describes the methods and procedures employed in the investigation of the problem presented in this study. Selection of subjects, testing instruments, coder reliability, survey reliability and validity, methods of data collection, scoring of data, and treatment of data are discussed.

Selection of Subjects

Teachers of 20 upper level elementary physical education classes and their respective students served as subjects in the present study. These subjects were selected from nine school districts in the Ithaca-Cortland-Elmira area of central New York. All subjects were videotaped twice during the spring of 1980 with the permission and previous knowledge of the teachers as well as the parents of students involved in this study. Permission of the subjects in this study was indicated by the signing of the appropriate consent forms.

Testing Instruments

Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was used in this study to objectively and systematically record classroom interaction behaviors every 3 seconds for two class sessions of each of the 20 participating physical education classes. The data recorded allowed for analysis of direct and indirect teacher behavior, pupil response behavior, class structure, and teaching agencies employed. The validity of CAFIAS has been shown beyond the .05 level of significance using the "blind-live" method of comparison between CAFIAS and FIAS (Cheffers, Amidon, & Rogers, 1974). The CAFIAS categories are described in Appendix A.

A pilot study was performed to revise the Children's Attitude Inventory Toward Physical Education (CAIPE) for increased ease of administration of the attitude survey and to reduce the amount of time required to administer the survey. CAIPE is a 50-item inventory designed to measure the attitude of upper level elementary students toward physical education. Each item consists of a statement about physical education followed by a 6-point Likert scale on which the student indicates his degree of agreement on a range extending from "strongly agree" to "strongly disagree." The statements on this survey were classified into six content areas as follows: (a) program content (10 items), (b) outcomes of program content (16 items), (c) self-concept and level of aspiration (9 items), (d) peer group relations (8 items), (e) teacher (4 items), and (f) scheduling and time (3 items) (Routon, 1977). CAIPE is presented in Appendix B.

The pilot study was initiated by administering CAIPE to 125 upper elementary level students attending school in the Ithaca, New York area. The responses of these students were transferred to computer cards so that the survey could be tested for reliability and subjected to an item analysis. The item analysis resulted in the elimination of 23 items; those items for which the correlation of the item to the total test score was below .40 were discarded. A second item analysis on the 27-item test resulted in the elimination of two more items which had correlation coefficients below .40, reducing the number of items from 27 to 25. Within the remaining 25 items, 13 were positive statements toward physical education and 12 were negative statements toward physical education. These remaining statements which composed the Revised Form of the Children's Attitude Inventory Toward Physical Education (RFCAIPE) were classified into the six content areas identified by Toulmin (1973): (a) program content (9 items), (b) outcomes of program content

(6 items), (c) self-concept and level aspirations (5 items), (d) peer group relations (2 items), (e) teacher (2 items), and (f) scheduling and time (2 items). RFCAIPE is presented in Appendix C.

Survey Reliability and Validity

The internal consistency reliability estimates were computed for CAIPE and RFCAIPE based upon the responses of the 125 students participating in the pilot study. The reliability coefficient of CAIPE as calculated using the Kuder-Richardson Formula 20 was .89 and for RFCAIPE was .85.

Based upon the responses of the 125 participants in the pilot study, validity was determined by correlating the total scores on the 50-item CAIPE to the total scores on the 25-item RFCAIPE. The resulting correlation coefficient of .96 as determined by the Pearson Product-Moment Formula indicated high concurrent validity for the RFCAIPE, with CAIPE as the criterion.

Coder Reliability

Coder reliability was determined by using the Spearman rank-order correlation on the variables with the highest 10 percentages for CAFIAS data recorded in the observation of two videotapes of two randomly selected classes, one from each group, coded on 2 different days. The results are presented in Appendix D.

Methods of Data Collection

Data for analysis of classroom interaction behaviors were collected during the spring of 1980 in the classes of 20 physical educators at the upper elementary level. Each participating teacher and the principals of the schools involved were contacted in person to obtain permission to videotape one of the teacher's classes on two separate occasions and to administer the attitude survey, RFCAIPE, to this class. In addition, parent informed consent forms were given to the teachers in this initial meeting to

that they could be distributed to participating students at least 7 days in advance of the initial taping. A copy of this consent form is presented in Appendix E.

The two class sessions were recorded in their entirety using a microphone and videotape recorder to capture all verbal and nonverbal interaction behaviors. On the occasion of the second taping session, the first 6 to 10 minutes of class were allotted to the researcher for the administration of RFCAIPE to the students in the class.

Without knowledge of the results of the attitude testing, the tapes were coded using CAFIAS.

Scoring of Data

The RFCAIPE was developed as a Likert-type scale. Each question was scored on a scale ranging from 1 to 6 dependent upon the degree to which the subject agreed or disagreed with a statement. Responses indicating a positive attitude toward physical education were awarded a score of 4, 5, or 6; responses indicating negative attitude toward physical education were awarded a score of 1, 2, or 3. Each test was scored by hand and the mean score for each class was computed.

Data recorded in the coding of videotaped class sessions using CAFIAS were transferred to computer data cards for analysis. Computer analysis provided matrices, ratios, and percentages for eight interaction variables identified by CAFIAS. A mean score across each variable from the two class sessions observed for each subject was used to represent the interaction behaviors of that particular class.

Treatment of Data

The mean score of the students on the RFCAIPE for each class was used to distinguish 10 classes with a more positive attitude toward physical

education from 10 classes with a less positive attitude toward physical education. The computed means of the eight variables identified by CAFIAS for each of the two groups were submitted to a multivariate analysis of variance to determine if significant differences existed between the two groups. Univariate analyses of variance were run to identify which of the eight CAFIAS variables contributed independently to significant differences between the two groups. The discriminant function coefficients of the eight CAFIAS variables were calculated to indicate the relative contributions of all variables to between-group differences.

Significance beyond the .05 level was used for all statistical hypotheses in the present study.

Summary

Participants in this study were the teachers and students of 20 upper level elementary physical education classes from nine school districts in the Ithaca-Cortland-Elmira area of central New York. Prior to videotaping and administration of the attitude survey, the participants involved in the study were contacted to set the dates for observation and to obtain the required consent from the appropriate persons.

Student attitudes toward physical education were determined based upon the responses of the students to the RFCAIPE. The mean scores of the students from each class were used to separate 10 classes with a more positive attitude toward physical education from 10 classes with a less positive attitude toward physical education.

The videotaped class sessions were coded using CAFIAS by a reliable coder. The resulting data were transferred to computer cards for computer analysis. Mean ratios and percentages for eight CAFIAS variables described the interaction patterns present in each of the 20 physical education classes coded.

A multivariate analysis of variance was run to determine if there was an overall significant difference in interaction behaviors between the two groups differing in attitude. The relative contribution of all variables to between-group differences was calculated using discriminant function analysis. Univariate analyses of variance were used to find which of the eight CAFIAS variables contributed independently to differences between the two groups. Significance beyond the .05 level was used to test all statistical hypotheses.

Chapter 4

ANALYSIS OF DATA

This chapter presents the results of the statistical analysis of data from this study comparing the classroom interaction behaviors of elementary physical education classes which differ with respect to attitude toward physical education. The findings are presented in terms of the reliability of the coder, the analysis of teaching behavior data, and a summary.

Coder Reliability

Coder reliability was determined through the following procedure. Two videotaped classes, one from each group in this study, were randomly selected by the investigator. Each tape was coded on 2 different days. A Spearman rank-order correlation was used to correlate the top 10 cells obtained from the two independent codings of the same tape for each of the two randomly selected tapes (Appendix D). A mean correlation of .99 was established, which was adequate to indicate reliability. The data from the comparison of observations are shown in Table 1.

Analysis of Teaching Behavior Data

A multivariate analysis of variance (MANOVA) was performed to compare the classroom interaction behaviors of elementary physical education classes which differ with respect to attitude toward physical education. Classroom interaction behaviors were represented by eight CAFIAS variables. Group means and standard deviations for the eight CAFIAS variables analyzed are presented in Table 2. These mean scores indicate that the interactions represented by the first six categories listed occurred more often in classes with a more positive attitude toward physical education. The multivariate analysis of variance revealed a significant difference in interaction behaviors between the

Table 1

Coder Reliability

Subject	r_s	M
210 More Positive Attitude	.9878	.99
110 Less Positive Attitude	.9878	

Note. Coder reliability was determined by a Spearman rho comparison of the coding of teaching behaviors for two independent observations of the same class tape.

Table 2

Means and Standard Deviations of Eight CAFIAS Variables

CAFIAS Variables	Less Positive Attitude Classes		More Positive Attitude Classes	
	M	SD	M	SD
1. Teacher Questions, Verbal	4.374	3.944	17.79	7.690
2. Teacher Questions, Nonverbal	5.167	6.483	22.14	10.10
3. Teacher Acceptance and Praise, Verbal	12.78	4.619	67.28	8.403
4. Teacher Acceptance and Praise, Nonverbal	17.74	8.835	69.53	8.025
5. Pupil Verbal Initiation, Teacher Suggested	61.76	30.43	75.19	15.10
6. Pupil Nonverbal Initiation, Teacher Suggested	44.02	33.55	60.41	26.33

Table 2 (continued)

CAFIAS Variables	Less Positive Attitude Classes		More Positive Attitude Classes	
	M	SD	M	SD
7. Pupil Verbal Initiation, Student Suggested	17.75	20.67	11.93	9.446
8. Pupil Nonverbal Initiation, Student Suggested	17.47	25.04	12.08	11.76

two groups, $F(8,11) = 74.219$, $p < .05$. These findings, presented in Table 3, led to rejection of the null hypothesis stating there will be no statistically significant differences between the interaction behaviors of upper level elementary physical education classes with a more positive as opposed to less positive attitudes toward physical education.

Univariate analysis of variance was performed on each of eight CAFIAS variables to determine which variables differed significantly when considered independently of the other seven variables. Results are shown in Table 4. Four variables were found to be statistically significant. These significant variables included: teacher use of acceptance and praise, verbal, $F(1,18) = 323.168$, $p < .05$; teacher use of acceptance and praise, nonverbal, $F(1,18) = 188.281$, $p < .05$; teacher questioning; verbal, $F(1,18) = 24.100$, $p < .05$; and teacher questioning, nonverbal, $F(1,18) = 20.019$, $p < .05$. A comparison of means indicated that all four variables were higher for the group representing those classes with a more positive attitude toward physical education.

Discriminant function analysis was performed to determine the percentage of between groups variance that each of the eight CAFIAS variables accounted for. Table 5 shows that teacher acceptance and praise, verbal and teacher questioning, verbal accounted for 84.42% of the between groups variance. All other variables combined accounted for less than 16% of the variance.

The top 10 ranked cell frequencies of interaction patterns and their percentage of occurrence for the two groups are presented in Table 6. Six of the 10 most frequent interaction patterns of each group are common to both groups. The dominant pattern of behavior common to both groups was extended teacher information giving followed by student interpretive response involving interaction among students (5-5-8\-10-8\). This pattern was represented in the top three occurring cells of both groups.

Table 3

Multivariate Analysis of Variance Contrasting Classes with More Positive and Less Positive Attitudes Using Eight CAFIAS Variables

Source	df	F
Between Groups	8,11	74.219*

*$p < .05$.

Table 4

Univariate Analyses of Variance Contrasting Classroom Behaviors of Classes with More Positive Attitudes and Less Positive Attitudes

CAFIAS Variable	df	F
1. Teacher Questions, Verbal	1,18	24.100*
2. Teacher Questions, Nonverbal	1,18	20.019*
3. Teacher Acceptance and Praise, Verbal	1,18	323.168*
4. Teacher Acceptance and Praise, Nonverbal	1,18	188.281*
5. Pupil Verbal Initiation, Teacher Suggested	1,18	1.563
6. Pupil Nonverbal Initiation, Teacher Suggested	1,18	1.476
7. Pupil Verbal Initiation, Student Suggested	1,18	0.656
8. Pupil Nonverbal Initiation, Student Suggested	1,18	0.379

Table 5

Discriminant Function Analysis and Percentage of Contribution of the Eight CAFIAS Variables for Conditions

	Standardized Discriminant Weighting	Percentage of Between Groups Variance Accounted for
1. Teacher Acceptance and Praise, Verbal	.74975	56.21
2. Teacher Questions, Verbal	.53116	28.21
3. Pupil Nonverbal Initiation, Teacher Suggested	.26580	7.07
4. Pupil Verbal Initiation, Teacher Suggested	.21607	4.67
5. Teacher Acceptance and Praise, Nonverbal	.13319	1.77
6. Teacher Questions, Nonverbal	.11314	1.28
7. Pupil Verbal Initiation, Student Suggested	.07324	.54
8. Pupil Nonverbal Initiation, Student Suggested	.04998	.25

Table 6

Ten Most Frequent Interaction Patterns of Classes With More Positive and Less Positive Attitudes Toward Physical Education

More Positive Attitude		Less Positive Attitude	
Interaction Patterns	Percentage of Occurrence	Interaction Patterns	Percentage of Occurrence
5-5	11.08	5-5	28.10
10-8↖	6.34	8↖-10	10.86
8↖-10	6.19	10-8↖	10.83
8↖-3	5.65	6-8	7.22
5-8↖	4.38	5-6	5.15
6-8	4.02	8-8	4.56
5-6	3.78	6-8↖	3.71
8↖-2	3.69	8-6	3.71
3-5	3.57	8-5	3.64
8↖-5	3.53	8↖-5	2.91

5-5 extended teacher information giving

10-8↖ student interpretive response with student interaction

8↖-10 student interpretive response with student interaction

Table 6 (continued)

8\-3	student interpretive response followed by teacher acceptance
5-8\	teacher information giving followed by student interpretive response
6-8	teacher directions followed by student predictable response
5-6	teacher information giving followed by teacher directions
8\-2	student interpretive response followed by teacher praise
3-5	teacher acceptance followed by teacher information giving
8\-5	student interpretive response followed by teacher information giving
8-8	extended student predictable response
6-8\	teacher directions followed by student interpretive response
8-6	student predictable response followed by teacher directions
8-5	student predictable response followed by teacher information giving

Beyond the similarity found in the dominant behavior pattern, there were three other behavior patterns common to both groups. These patterns were teacher directions followed by student predictable response (6-8) located in the sixth most frequently occurring cell for the more positive group and the fourth most frequently occurring cell for the less positive group; teacher information giving followed by teacher directions (5-6) located in the seventh most frequently occurring cell for the more positive group and the fifth most frequently occurring cell for the less positive group; and student interpretive response followed by teacher information giving (8↖-5) located in the 10th most frequently occurring cell for both groups.

Behavior patterns located in the top 10 most frequently occurring cells of the more positive group which were specific to that group were student interpretive response followed by teacher acceptance (8↖-3) which was the fourth most frequently occurring pattern in this group; teacher information giving followed by student interpretive response (5-8↖) which was the fifth most frequently occurring behavior pattern in this group; student interpretive response followed by teacher praise (8↖-2) which was the eighth most frequently occurring pattern in this group; and teacher acceptance followed by teacher information giving (3-5) which was the ninth most commonly occurring interaction pattern in this group.

Behavior patterns located in the top 10 most frequently occurring cells of the less positive group which were specific to that group were extended student predictable response (8-8) which was the sixth most frequently occurring behavior pattern in this group; teacher directions followed by student interpretive response (6-8↖) which was the seventh most frequently occurring behavior pattern in this group; student predictable response followed by teacher directions (8-6) which was the eighth most frequently occurring

behavior pattern in this group; and student predictable response followed by teacher information giving (8-5) which was the ninth most frequently occurring behavior pattern in this group.

The means for the percentages of behaviors which were recorded in each of 20 CAFIAS categories for each of the two groups were computed. The results are presented in the form of a bar graph in Figure 1. Results indicate that teacher use of praise, teacher use of acceptance, and teacher use of questioning occurred more often in those classes with a more positive attitude toward physical education. Teacher information giving (the dominant behavior for both groups), teacher directions, and teacher use of criticism occurred more often in those classes with a less positive attitude toward physical education. In addition, narrow student responses (verbal), student interpretive responses, and student initiated responses occurred more often in those classes with a more positive attitude toward physical education, while narrow student responses (nonverbal) occurred more often in those classes with a less positive attitude toward physical education.

Summary

Coder reliability for this study was calculated using the Spearman rank-order formula. A mean correlation of .99 was established. This coefficient was adequate to indicate reliability.

A multivariate analysis of variance comparing the interaction behaviors of elementary physical education classes with a more positive attitude toward physical education to the interaction behaviors of elementary physical education classes with a less positive attitude toward physical education was performed. Results indicated that the interaction behaviors of these two groups differed significantly, $F(8,11) = 74.219$, $p < .05$. The null hypothesis stating that there would be no significant differences between the interaction patterns of

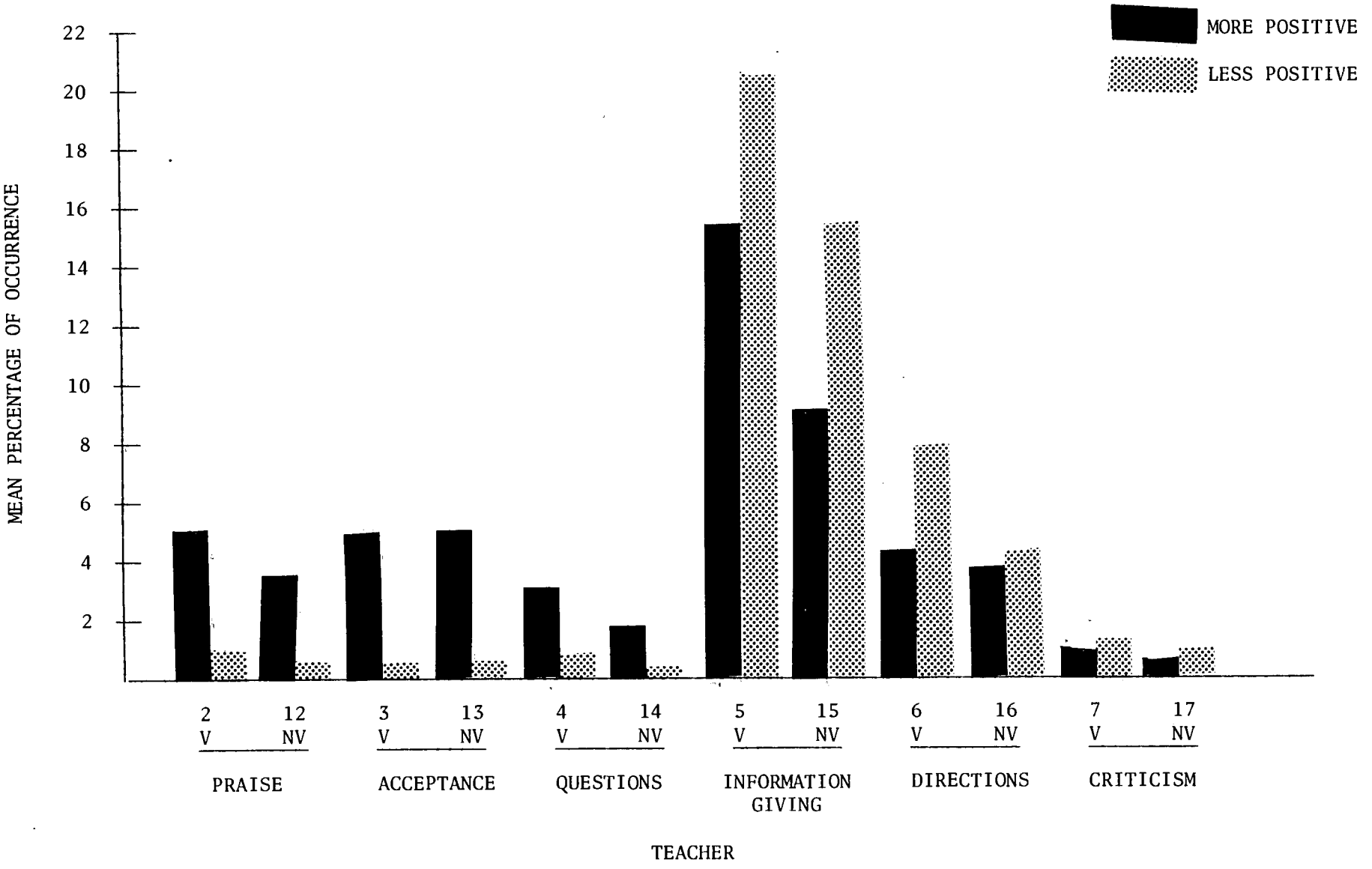

Figure 1. Mean percentage of behaviors in each CAFIAS category for attitude groups.

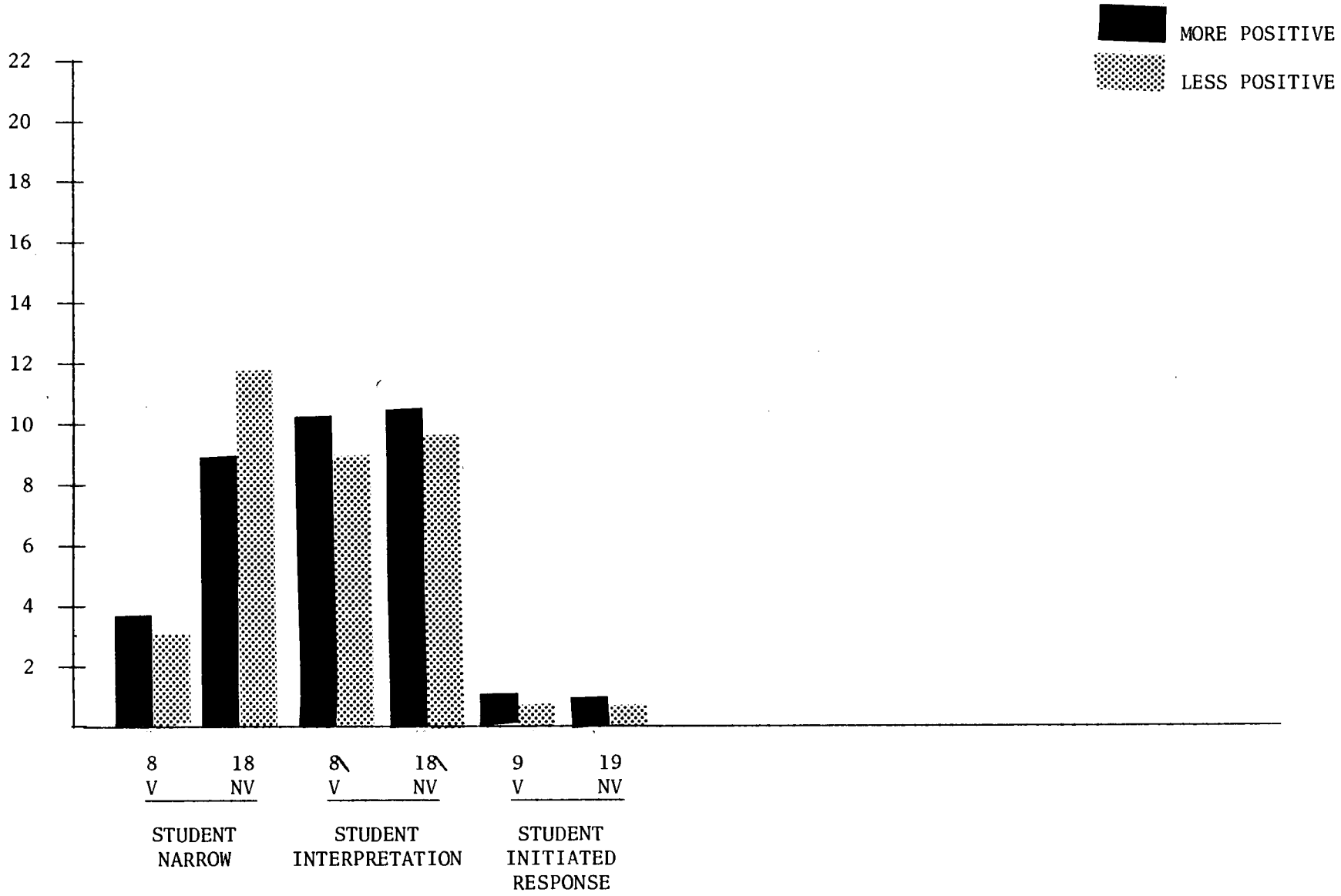

Figure 1 (continued). Mean percentage of behaviors in each CAFIAS category for attitude groups.

upper level elementary physical education classes with differing attitudes toward physical education was rejected.

Univariate analysis of variance was performed on each of the eight CAFIAS variables representing classroom interaction behaviors. This analysis was performed in order to determine which of these interaction behavior variables differed significantly when considered independently of the other seven variables. Those variables which differed significantly between groups were teacher use of acceptance and praise, verbal; teacher use of acceptance and praise, nonverbal; teacher questioning, verbal; and teacher questioning, nonverbal.

Discriminant function analysis indicated that teacher acceptance and praise, verbal and teacher questioning, verbal accounted for 84.42% of the between groups variance. Teacher acceptance and praise, verbal, alone, accounted for 56.21% of the variance.

Analysis of the 10 most frequently occurring interaction patterns of each group indicated that the two groups had 6 interaction patterns in common among the top 10 cells. The dominant pattern in both groups was extended teacher information giving followed by student interpretive response involving interaction among students (5-5-8\-10-8\).

Analysis of the mean percentages of behaviors which were recorded in each of the 20 CAFIAS categories for each of the two groups further supports group differences. Higher percentages of teacher praise, teacher questioning, teacher acceptance, student interpretive responses, and student initiated responses occurred in classes with a more positive attitude toward physical education. Teacher information giving, teacher directions, and teacher criticism occurred in higher percentages in classes with a less positive attitude. Although verbal student interpretive responses occurred at a greater rate in classes with a

more positive attitude, the percentage of nonverbal student interpretive responses was greater in classes with a less positive attitude. Teacher information giving occurred in the highest percentage in both groups.

Chapter 5

DISCUSSION OF RESULTS

This investigation compared the interaction behaviors of the upper level elementary physical education classes with more positive attitude toward physical education to the interaction behaviors of upper level elementary physical education classes with a less positive attitude toward physical education. Class attitude for each class was determined by the mean score of the students in the class on the 25-item Revised Form of the Children's Attitude Inventory toward Physical Education (RFCAIPE). RFCAIPE is an adaptation of the Children's Attitude Inventory developed by Toulmin and Sherrill (Routon, 1977). The classification of groups as more positive and less positive in attitude toward physical education was based on Toulmin's (1973) observation that children at the elementary level possess very favorable attitudes toward physical education, therefore, measurement of attitude must be aimed at discrimination between positive values rather than discrimination between positive and negative.

The interaction behaviors of the 20 classes participating in this study were coded using CAFIAS. Computer analysis of the CAFIAS data yielded behavior ratios for eight CAFIAS variables for each group, the percentage of behaviors which was coded in each of the 20 CAFIAS categories for each group, and the percentage of behaviors occurring in each interaction pattern cell for each group. As in comparative teacher analysis studies performed previously, the interaction behaviors, represented by CAFIAS data, of the two groups were compared.

Explanation and Interpretation of Results

The statistical analysis of the data collected led to a rejection of the null hypothesis which stated there would be no differences in the interaction

patterns of elementary physical education classes differing in attitude toward physical education. Further examination of the results, as well as comparative analysis utilizing the results of similar investigations, reveals behavioral differences between the two groups of physical education classes differing in attitude toward physical education. In addition, a description of the typical teaching style and classroom setting of each group is derived through this further analysis.

The command style of teaching and participation in sports activities appeared to be dominant behaviors within both groups considered in this study. This is reflected in the major interaction pattern of both groups which was extended teacher information giving followed by student interpretive response involving interaction among students. Despite the similarity in class conduct apparent from the analysis of the ranking of interaction patterns, further examination reveals differences in the frequencies of the dominant interaction patterns evident in each group. Teacher information giving, lecture and demonstration, accounted for 36.3% of all behaviors among classes in the less positive attitude group and 24.4% of all behaviors among classes in the more positive attitude group. In addition, student interpretive response accounted for 18.4% of all behaviors among physical education classes in the less positive attitude group and 20.6% of all behaviors among physical education classes in the more positive attitude group. These statistics point out that the frequency of lecture and demonstration as a teacher behavior is approximately 33% greater in the physical education classes with a less positive attitude toward physical education, whereas, the frequency of student interpretive responses is slightly greater in the physical education classes with a more positive attitude. Despite similar teaching styles, the students in elementary physical education classes with less positive attitudes toward physical education were exposed to

a greater percentage of time in which teacher lecture and demonstration were the dominant classroom interaction behaviors.

Furthermore, the teachers in the more positive attitude group were more flexible in the type of behavior exhibited. This is reflected in the relative amounts of behavior which occurred in each one of the teacher behavior categories. In the less positive attitude group, teacher information giving and directions accounted for 48.5% of all behaviors while teacher praise, teacher acceptance, and teacher questioning accounted for less than 3.5% of all behaviors. In contrast, teacher information giving and directions accounted for 22.3% of all behaviors in the more positive attitude group, and teacher praise, teacher acceptance, and teacher questioning accounted for 8.5%, 10.3%, and 4.7% of all behaviors, respectively. These statistics serve to point out that students in elementary physical education classes with more positive attitudes toward physical education were exposed to teachers who were more flexible in their interaction behavior and more indirect in their approach toward students.

The statistics presented above would also indicate that physical education teachers in the more positive attitude group asked more questions, were more accepting of student input, and more frequently offered their students praise. This is supported by the fact that the univariate analysis of eight CAFIAS variables revealed that the two groups differed significantly with respect to the following variables: teacher use of acceptance and praise, verbal; teacher use of acceptance and praise, nonverbal; teacher use of questioning, verbal; and teacher use of questioning, nonverbal. Furthermore, discriminant function analysis revealed that teacher use of acceptance and praise, verbal and teacher use of questioning, verbal accounted for 84.42% of the between groups differences. The amount of variance between groups due to the teachers' use

of questioning, acceptance, and praise serves to point out the fact that students in the more positive attitude classes were posed questions and challenged more frequently, praised more frequently, and accepted more frequently in comparison to physical education students at the upper elementary level in classes with less positive attitudes.

The above discussion supports the conclusion that students in physical education classes with a less positive attitude toward physical education were exposed primarily to command style teaching. These students were infrequently praised, shown acceptance, or challenged by their teachers. Students in classes with a more positive attitude toward physical education were taught primarily through a less direct, modified command style of teaching. These students were more frequently praised, shown acceptance, and challenged by their teachers. Furthermore, students in classes with a more positive attitude were exposed to teachers who were more flexible in their behaviors while interacting with students.

Comparative Analysis of Results

The results of the present study reveal findings similar to those of other investigations performed in the area of interaction analysis of physical education classes and athletic teams. Teacher directness, teacher use of questioning, and teacher use of acceptance and praise are interaction behavior areas in which these similarities are most readily evident.

The finding that elementary level physical education teachers more frequently accepted and praised students in classes with a more positive attitude toward physical education supports a similar finding by Mancini (1974). More frequent use of acceptance and praise was also found to be evident among coaches of high school athletic teams, male and female, which indicated more satisfaction with their team environment (Hirsch, 1978; Proulx, 1979; Staurowsky,

1979). Coaches rated as effective were also shown to use more player praise and acceptance than those rated as less effective (Avery, 1978). Those studies dealing with athlete satisfaction in the team environment suggest that satisfaction of athletes may be dependent upon the amount of praise and acceptance given by the coach (Staurowsky, 1979). With respect to the present study, such an assumption would suggest that students exposed more frequently to teacher acceptance and praise in the elementary physical education setting develop a more positive attitude toward physical education.

Teacher use of questioning in the elementary physical education setting was also found to be more evident in classes with a more positive attitude toward physical education. These results are again in support of the findings of Mancini (1974). Although questioning behaviors were exhibited more frequently by coaches of teams who indicated more satisfaction with their team environment, there were few significant differences found in the coaches' use of questioning behavior between more satisfied and less satisfied groups (Hirsch, 1978; Proulx, 1979; Staurowsky, 1979). The collective findings of these studies suggest that teacher use of questioning may be important in maintaining more positive attitudes toward physical education, but this type of behavior may not be important in maintaining a positive team atmosphere.

Directness of teaching style is the third behavioral area in which similarities were found between the present study and similar studies. The present study again supports the findings of Mancini (1974) in which it was revealed that elementary physical education students in classes taught in a strict direct method had a less positive attitude than elementary physical education students taught in classes in which students were encouraged to make decisions in the class. Furthermore, Avery (1978) found that coaches rated as effective were more indirect in their style of teaching. It was also

found that coaches of teams which indicated more satisfaction with their team environment were, in general, more indirect in their interaction behaviors (Hirsch, 1978; Proulx, 1979; Staurowsky, 1979).

Summary

Comparison of the results of the present study to those of similar studies and further explanation of the results of this study revealed important relationships between classroom behaviors and student attitudes. Coaches and teachers who were more flexible in their teaching behaviors, used a less direct style of teaching, and offered praise and acceptance more frequently to their students were rated as more effective and were found in a teaching atmosphere in which students/athletes had a more positive attitude toward their environment.

Based upon these findings, the assumption was made that flexibility in teaching style, an indirect style of teaching, and increased teacher acceptance and praise behaviors may be conducive to the development of more positive student attitudes and a more positive learning environment. Acceptance of this assumption could only be based upon further investigations in which the research model employed is such that a causal relationship may be revealed.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

The interaction behaviors in 10 elementary physical education classes with a more positive attitude toward physical education were compared to the interaction behaviors in 10 elementary physical education classes with a less positive attitude toward physical education. With the permission of the participating teachers and the parents of the participating students, the Children's Attitude Inventory Toward Physical Education (CAIPE) was administered to 125 upper level elementary school students. Analysis of the scores obtained on this test administration resulted in the elimination of 25 items from the 50-item CAIPE. The resulting 25-item Revised Form of the Children's Attitude Inventory Toward Physical Education (RFCAIPE) was administered to the students in the 20 physical education classes participating in the present study. The resulting class means on the inventory were used to separate classes into groups classified as more positive and less positive in attitude toward physical education. Each of the participating classes was videotaped twice; those videotapes were coded using Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS). The behaviors coded were placed on computer cards for analysis. Computer analysis yielded matrices and tabulated ratios and percentages for eight CAFIAS variables. These ratios and percentages were tallied for each of the two taping sessions for each individual, and a mean score was calculated to represent each subject.

A multivariate analysis of variance revealed a significant difference beyond the .05 level between the interaction behaviors of upper level elementary

physical education classes with a more positive attitude toward physical education and the interaction behaviors of classes on the same level with a less positive attitude toward physical education. The null hypothesis which stated there would be no differences between the interaction patterns of classes with differing attitudes was rejected. Univariate analyses of variance were performed in order to determine which of the eight CAFIAS variables differed significantly when considered independently of the other seven variables. Teacher use of acceptance and praise, verbal; teacher use of acceptance and praise, nonverbal; teacher questioning, verbal; and teacher questioning, nonverbal were found to occur in significantly different amounts in the two groups at the .05 level. Each of the behaviors occurred at a higher percentage in classes with a more positive attitude toward physical education. Further, discriminant function analysis revealed that teacher acceptance and praise, verbal and teacher questions, verbal accounted for 84.42% of between groups variance. Analyses of the most frequently occurring behavior patterns revealed that the two groups had four dissimilar interaction patterns among the top ten cells of each of the two groups.

Conclusions

The following conclusions could be supported by the findings of this investigation:

1. The interaction behaviors of upper level elementary physical education classes with a more positive attitude toward physical education were significantly different from the interaction behaviors of upper level elementary physical education classes with a less positive attitude toward physical education.

2. Teacher use of acceptance and praise, verbal and teacher questioning, verbal accounted for the majority of variance in interaction behaviors between classes with more positive attitudes and less positive attitudes toward

physical education.

3. Teacher use of acceptance and praise, both verbal and nonverbal, were significantly greater in classes with a more positive attitude toward physical education.

4. Teacher use of questioning, both verbal and nonverbal, were significantly greater in classes with a more positive attitude toward physical education.

5. Teacher use of directions, teacher use of information giving, and teacher use of criticism occurred more frequently in classes with a less positive attitude toward physical education.

6. Teacher use of information giving behaviors was the most frequently occurring behavior in both groups.

Recommendations for Further Study

The following recommendations are made for future research:

1. Compare the dyadic interaction patterns of teachers to students with less positive attitudes and more positive attitudes toward physical education.

2. Perform a longitudinal study in order to determine if student attitudes change with different instructors who behave differently.

3. Develop an attitude scale measuring the attitudes of first, second, and third grade students toward physical education so that a study similar to the present study may be performed on this level.

4. Compare the teaching behaviors of teachers with more positive attitudes toward physical education to the teaching behaviors of teachers with less positive attitudes toward physical education.

5. Compare the classroom interaction patterns of classes with more positive attitudes toward physical education to the classroom interactions of classes with less positive attitudes toward physical education on the secondary level.

Appendix A

THE CATEGORIES OF CHEFFERS' ADAPTATION OF
FLANDERS' INTERACTION ANALYSIS SYSTEM

Categories	Teacher Environment (E) Student (S) Verbal	Relevant Behaviors	Nonverbal
	2		12
2-12	Praises, commends, jokes, encourages	Face:	Smiles, nods with smile, (energetic) winks, laughs
		Posture:	Claps hands, pats on shoulder, places hand on head of student, wrings student's hand, embraces joyfully, laughs to encourage, spots in gymnastics, helps child over obstacles
	3		13
3-13	Accepts, clarifies, uses, and develops suggestion and feeling by the learner	Face:	Nods without smiling, tilts head in empathetic reflection, sighs empathetically
		Posture:	Shakes hands, embraces sympathetically, places hand on shoulder, puts arm around shoulder or waist, catches an implement thrown by student, accepts facilities
	4		
4-14	Asks questions requiring student answer	Face:	Wrinkles brow, opens mouth, turns head with quizzical look

CATEGORIES (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
4-14	4	Posture:	14 Places hands in air, waves finger to and fro anticipating answer, stares awaiting answer, scratches head, cups hand to ear, stands still half turned towards person, awaits answer
5-15	5 Gives facts, opinions, expresses ideas, or asks rhetorical questions	Face: Posture:	15 Whispers words inaudible, sings, or whistles Gesticulates, draws, writes, demonstrates activities, points
6-16	6 Gives directions or orders	Face: Posture:	16 Points with head, beckons with head, yells at Points finger, blows whistle, holds body erect while barking commands, pushes child through a movement, pushes a child in a given direction
7-17	7 Criticizes, expresses anger or distrust, sarcastic or extreme self-reference	Face:	17 Grimaces, growls, frowns, drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head

CATEGORIES (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
	7		17
7-17		Posture:	Hits, pushes away, pinches, grapples with, pushes hands at student, drops hands in disgust, bangs table, damages equipment, throws things down
	8		18
8-18	Student response that is entirely predictable, such as obedience to orders, and responses not requiring thinking beyond the comprehension phase of knowledge	Face:	Poker face response, nods, shakes, gives small grunts, quick smile
		Posture:	Moves mechanically to questions or directions, responds to any actions with minimal nervous activity, robot-like
	Eine (8\)		Einteen (18\)
Eine (8\)	Predictable student responses requiring some measure of evaluation and synthesis from the student, but must remain within the province of predictability. The initial behavior was in response to teacher initiation.	Face:	A "What's more, Sir" look, eyes sparkling
Eineteen (18\)		Posture:	Adds movements to those given or expected, tries to show some arrangement requiring additional thinking; e.g., works on gymnastic routine, dribbles basketball, all game playing

CATEGORIES (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
	9		19
9-19	Pupil-initiated talk that is purely the result of their own initiative and that could not be predicted	Face:	Interrupting sounds, gasps, sighs
		Posture:	Puts hands up to ask questions, gets up and walks around without provocation, begins creative movement education, makes up own games, makes up own movements, shows initiative in supportive movement, introduces new movements into games not predictable in the rules of the game
	10		20
10-20	Stands for confusion, chaos, disorder, noise, much noise	Face:	Silence, children sitting doing nothing, noiselessly awaiting teacher just prior to teacher entry, etc.

Note. Cited from Cheffers, Amidon, & Rodgers, 1974.

Appendix B

HOW I FEEL ABOUT PE (CAIPE)

DIRECTIONS:

On the following pages, you will find some statements about gym class. We would like to know exactly how you feel about each statement. You are asked to think about physical education as it concerns you during your regular gym class period. Do not consider the statements as after school activities. Students are not all alike in their feelings. There are no right or wrong answers.

As I read each statement, you will read along with me. After reading a statement you will know at once, in most cases, whether you agree or disagree with the statement. If you agree, then decide whether to place an "X" under strongly agree, agree, or slightly agree. If you do not agree, then place an "X" under slightly disagree, disagree, or strongly disagree. We will keep your answers secret, so please answer each statement exactly the way you feel it.

Sample:

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I enjoy playing basketball	( )	( )	( )	( )	( )	( )

(Next page to begin)

		Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
1.	I like to do exercises	( )	( )	( )	( )	( )	( )
2.	There is not enough good coming from gym class to give it so much time	( )	( )	( )	( )	( )	( )
3.	Tests should not be given in gym class	( )	( )	( )	( )	( )	( )
4.	Most of my friends like gym class	( )	( )	( )	( )	( )	( )
5.	We don't get to play what we want to in gym class	( )	( )	( )	( )	( )	( )
6.	The skills we learn in gym class are very important	( )	( )	( )	( )	( )	( )
7.	Gym class has taught me to get along better with the other kids	( )	( )	( )	( )	( )	( )
8.	I am afraid of getting hurt in gym class	( )	( )	( )	( )	( )	( )
9.	Many of the games we play in gym class are a waste of time	( )	( )	( )	( )	( )	( )
10.	Gym class should be only for those who are good at it	( )	( )	( )	( )	( )	( )
11.	Time for gym class is too short	( )	( )	( )	( )	( )	( )
12.	I like to play games in gym class	( )	( )	( )	( )	( )	( )
13.	I never get to be "it" when we play games in gym class	( )	( )	( )	( )	( )	( )
14.	I get enough exercise without gym class	( )	( )	( )	( )	( )	( )
15.	Boys and girls laugh at me in gym class when I can't do things	( )	( )	( )	( )	( )	( )

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
16. Gym teachers like children	( )	( )	( )	( )	( )	( )
17. I could better control my feelings if I did not have to take gym	( )	( )	( )	( )	( )	( )
18. When I get older, I plan to take band instead of gym class	( )	( )	( )	( )	( )	( )
19. Gym class teaches us to respect the rights of others	( )	( )	( )	( )	( )	( )
20. Gym skills bring more enjoyment to life	( )	( )	( )	( )	( )	( )
21. I get tired in gym class before others do	( )	( )	( )	( )	( )	( )
22. Some parents do not think gym class is very important	( )	( )	( )	( )	( )	( )
23. Gym class does not help me learn to control my feelings, such as anger	( )	( )	( )	( )	( )	( )
24. Our gym classes are fun	( )	( )	( )	( )	( )	( )
25. I like to run	( )	( )	( )	( )	( )	( )
26. Arguments in gym class have caused me to lose friends	( )	( )	( )	( )	( )	( )
27. Gym class has helped me improve my physical fitness	( )	( )	( )	( )	( )	( )
28. When I grow up I will continue to exercise	( )	( )	( )	( )	( )	( )
29. My parents often scold me for ruining my clothes or getting dirty in gym class	( )	( )	( )	( )	( )	( )
30. Gym class teaches you good sportsmanship	( )	( )	( )	( )	( )	( )

		Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
31.	I feel so out of place in a gym class	( )	( )	( )	( )	( )	( )
32.	Gym class helps me to relax	( )	( )	( )	( )	( )	( )
33.	In gym class we have to do dumb things	( )	( )	( )	( )	( )	( )
34.	Gym class has taught me to appreciate the things my body can do	( )	( )	( )	( )	( )	( )
35.	Gym class is a waste of time in improving health	( )	( )	( )	( )	( )	( )
36.	Gym class doesn't help you to make friends	( )	( )	( )	( )	( )	( )
37.	I learn something new nearly everytime I have gym class	( )	( )	( )	( )	( )	( )
38.	I look forward to gym class regardless of the weather	( )	( )	( )	( )	( )	( )
39.	Not all children should have to take gym class	( )	( )	( )	( )	( )	( )
40.	Gym class encourages boys and girls to cheat	( )	( )	( )	( )	( )	( )
41.	Gym class is just as important for girls as it is for boys	( )	( )	( )	( )	( )	( )
42.	Many gym class activities make me feel clumsy	( )	( )	( )	( )	( )	( )
43.	I would rather not play in gym class if I can't be on my best friend's team	( )	( )	( )	( )	( )	( )
44.	Gym class gets us interested in good health habits	( )	( )	( )	( )	( )	( )

		Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
45.	Our grading system in gym class is fair	( )	( )	( )	( )	( )	( )
46.	Gym class is too rough	( )	( )	( )	( )	( )	( )
47.	Gym class has helped me to understand a lot of the kids better	( )	( )	( )	( )	( )	( )
48.	I've got really good physical fitness	( )	( )	( )	( )	( )	( )
49.	Most of the things I learn in gym class I can use after school	( )	( )	( )	( )	( )	( )
50.	I don't think we should have gym class every day	( )	( )	( )	( )	( )	( )

Thank you for your help.

Appendix C

REVISED FORM OF THE CHILDREN'S ATTITUDE INVENTORY

TOWARD PHYSICAL EDUCATION

DIRECTIONS:

On the following pages, you will find 25 statements about gym class. We would like to know exactly how you feel about each statement. You are asked to think about physical education as it concerns you during your regular gym class period. Do not consider the statements as after school activities. Students are not all alike in their feelings. There are no right or wrong answers.

As I read each statement, you will read along with me. After reading a statement you will at once, in most cases, know whether you agree or disagree with the statement. If you agree, then decide whether to place an "X" under strongly agree, agree, or slightly agree. If you do not agree, then place an "X" under slightly agree, disagree, or strongly disagree. We will keep your answers secret, so please answer each question the way you feel it.

Sample:

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I enjoy playing basketball	( )	( )	( )	( )	( )	( )

		Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
1.	I like to do exercises	( )	( )	( )	( )	( )	( )
2.	We don't get to play what we want in gym class	( )	( )	( )	( )	( )	( )
3.	Many of the games we play are a waste of time	( )	( )	( )	( )	( )	( )
4.	I like to play games in gym class	( )	( )	( )	( )	( )	( )
5.	Boys and girls laugh at me in gym class when I can't do things	( )	( )	( )	( )	( )	( )
6.	I could better control my feelings if I did not have to take gym	( )	( )	( )	( )	( )	( )
7.	Gym skills bring more enjoyment to life	( )	( )	( )	( )	( )	( )
8.	Some parents do not think gym class is very important	( )	( )	( )	( )	( )	( )
9.	Gym class does not help me learn to control my feelings, such as anger	( )	( )	( )	( )	( )	( )
10.	Our gym classes are fun	( )	( )	( )	( )	( )	( )
11.	I like to run	( )	( )	( )	( )	( )	( )
12.	Gym class has helped me improve my physical fitness	( )	( )	( )	( )	( )	( )
13.	When I grow up I will continue to exercise	( )	( )	( )	( )	( )	( )
14.	I feel so out of place in gym class	( )	( )	( )	( )	( )	( )
15.	In gym class we have to do dumb things	( )	( )	( )	( )	( )	( )
16.	Gym class has taught me to appreciate the things my body can do	( )	( )	( )	( )	( )	( )

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
17. I learn something new nearly everytime I have gym class	( )	( )	( )	( )	( )	( )
18. I look forward to gym class regardless of the weather	( )	( )	( )	( )	( )	( )
19. Gym class is just as important for girls as it is for boys	( )	( )	( )	( )	( )	( )
20. Many gym class activities make me feel clumsy	( )	( )	( )	( )	( )	( )
21. I would rather not play in gym class if I can't be on my friend's team	( )	( )	( )	( )	( )	( )
22. Gym class gets us interested in good health habits	( )	( )	( )	( )	( )	( )
23. Gym class is too rough	( )	( )	( )	( )	( )	( )
24. I've got really good physical fitness	( )	( )	( )	( )	( )	( )
25. I don't think we should have gym class every day	( )	( )	( )	( )	( )	( )

Appendix D

CODER RELIABILITY FOR SELECTED SUBJECTS

USING SPEARMAN RANK-ORDER CORRELATION

Subject 210 - More Positive Attitude

Top 10 Cells	Rank Observation One	Rank Observation Two	d	d^2
5-5	1	1	.00	.00
5-8	2	2	.00	.00
8-5	3	3	.00	.00
6-8	4	4	.00	.00
2-5	5	5	.00	.00
8-2	6	6	.00	.00
5-4	7	7	.00	.00
8-3	8	9	1.00	1.00
8-6	9	8	1.00	1.00
3-5	10	10	.00	.00

$\Sigma d^2 = 2.00$

Spearman Rank-Order Correlation Coefficient = .9878

Appendix D (continued)

CODER RELIABILITY FOR SELECTED SUBJECTS

USING SPEARMAN RANK-ORDER CORRELATION

Subject 110 - Less Positive Attitude

Top 10 Cells	Rank Observation One	Rank Observation Two	d	d^2
10-8\	1	2	1.00	1.00
8\-10	2	1	1.00	1.00
6-8	3	3	.00	.00
8\-5	4	4	.00	.00
5-8	5	5	.00	.00
8\-6	6	6	.00	.00
5-6	7	7	.00	.00
8\-7	8	8	.00	.00
5-5	9	9	.00	.00
7-8\	10	10	.00	.00

$\Sigma d^2 = 2.00$

Spearman Rank-Order Correlation Coefficient = .9878

Appendix E

INFORMED CONSENT FORM

PARENT COPY

Dear Parent:

This consent form is seeking your approval so that your child may be allowed to participate in a study in which he/she will be required to fill out a physical education attitude inventory and be videotaped in his/her physical education class.

The following procedures will be used: 1) your child's physical education class will be videotaped on two occasions; 2) on one of those occasions, your child will be required to respond to an attitude inventory measuring his/her attitude toward physical education; 3) the videotapes will be analyzed utilizing an interaction analysis system; and 4) the scores from the attitude inventory will be tallied in order to determine the attitude of your child's class toward physical education (the scores of each student will not be analyzed or recorded individually).

Test results will be kept confidential. The videotapes will be used for the sole purpose of analysis in this project. If you have any questions or do not agree to allow you child to participate in this study, notify me or the school principal within 7 days.

John Furey	277-4095
Researcher	Phone#

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